

EPA WORK ASSIGNMENT NO: 076-2JZZ
EPA CONTRACT NO: 68-W8-0110
FOSTER WHEELER ENVIRONMENTAL CORPORATION
ARCS II PROGRAM

FINAL
SITE INSPECTION PRIORITIZATION (SIP)
LAKEWOOD TOWNSHIP LANDFILL SITE
LAKEWOOD TOWNSHIP
OCEAN COUNTY, NEW JERSEY
CERCLIS NO. NJD980771711

JANUARY 1996

VOLUME IV OF IV

DECLASSIFIED

9/21/16
Date: Initial: *jh*

NOTICE

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235183



RECOMMENDATIONS

The present site score is 13.33 based on potential to release to groundwater, surface water and air pathways and the waste quantities associated with the landfill. The portion of the landfill where waste disposal took place was used as the source area.

The groundwater pathway score is 26.65 based on a potential-to-release basis. Release to the aquifer has not been documented. The population exposed to potential contamination within the 4-mile radius is 43,626. No actual contamination of drinking water wells has been established.

The surface water pathway score is 0.25 based on a potential to release. The target distance limit (15 miles) of the surface water pathway begins 1,300 feet southeast of the site at the Grass Hollow Brook. The target distance limit continues to and ends along Toms River. There are no drinking water intakes or endangered species habitats along the target distance limit.

The score for the soil exposure pathway is 0.00 based on no areas of observed contamination since the landfill was capped with a soil cover greater than 2 feet thick and no on-site workers, residents or endangered species habitats.

The air pathway score is 0.61 based on a potential to release. The low score is due to the lack of an observed release to air.

A sensitivity analysis was performed to determine how different scenarios would affect the site score and to assess the possibility of an observed release to surface water and Level I and Level II contamination of residential wells. The variables evaluated for the sensitivity analysis were the groundwater and surface water pathways since these pathways have the most potential to affect the overall site score. The soil exposure pathway was not evaluated due to the lack of an area of observed contamination and the fact that the landfill is covered with 2 feet of soil. The air pathway was not evaluated because there are no known gaseous hazardous substances in the landfill.

1. To increase the overall site score to or above 28.5, the groundwater pathway score would have to be about 57. A minimum of 35 people (14 wells, 2.5/well) would have to be exposed to Level I contamination or 352 people (140, 2.5/well) exposed to Level II contamination to raise the overall site score above 28.5. Actual contamination of residential wells has not been documented. According to the Ocean County Health Department (Ref. 37) contamination of drinking water wells has not been reported. In addition, there are no few residents in the direction of the groundwater flow which is southwest towards the Toms River. Documenting Level I contamination attributable to the site to 14 residential wells would be difficult. All of the municipal wells are located beyond the 1-mile radius.
2. Actual contamination of the surface water pathway is not expected. The closest wetland is located approximately 1.25 miles from the PPE along the Grass Hollow Brook and the closest fishing is Toms River located approximately 1.5 miles from the PPE. Contamination has to travel along the overland path to surface water for approximately

1.5 miles to reach the nearby wetland. None of the compound considered to be present in the landfill have a Bioaccumulation Potential Factor Value ≥ 500 , therefore, contamination of the Toms River as a fishery could not be documented.

Based on existing information and the sensitivity analysis, a finding of No Further Remedial Action Planned (NFRAP) is recommended for the Lakewood Township Landfill site.

Record Information

1. Site Name: Lakewood Township Landfill
(as entered in CERCLIS)
2. Site CERCLIS Number: NJD980771711
3. Site Reviewer: Kirti Shah
4. Date: November 1995
5. Site Location: Lakewood Township, Ocean County, New Jersey
(City/County,State)
6. Congressional District: 3
7. Site Coordinates: Single
Latitude: 40 03'50.0" Longitude: 074 11'10.0"

Site Description

1. Setting: Suburban
2. Current Owner: Municipal
3. Current Site Status: Inactive
4. Years of Operation: Inactive Site, from and to dates: 1973-1984
5. How Initially Identified: State/Local Program
6. Entity Responsible for Waste Generation:
 - Landfill
 - Municipal
7. Site Activities/Waste Deposition:
 - Municipal Landfill

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Waste Description

8. Wastes Deposited or Detected Onsite:

- Organic Chemicals

Response Actions

9. Response/Removal Actions:

- Site Access Has Been Restricted

RCRA Information

10. For All Active Facilities, RCRA Site Status:

- Subtitle D
- -Municipal Landfill

Demographic Information

11. Workers Present Onsite: No

12. Distance to Nearest Non-Worker Individual: > 10 Feet - 1/4 Mile

13. Residential Population Within 1 Mile: 2387.0

14. Residential Population Within 4 Miles: 63354.0

Water Use Information

15. Local Drinking Water Supply Source:

- Ground Water (within 4 mile distance limit)

16. Total Population Served by Local Drinking Water Supply Source: 33004.0

17. Drinking Water Supply System Type for Local Drinking
Water Supply Sources:

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- Municipal (Services over 25 People)

18. Surface Water Adjacent to/Draining Site:

- Stream

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HRS DOCUMENTATION RECORD
Lakewood Township Landfill - 11/15/95

PAGE: 1

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Latitude: 40 03'50.0"

Longitude: 074 11'10.0"

	Score
Ground Water Migration Pathway Score (Sgw)	26.65
Surface Water Migration Pathway Score (Ssw)	0.25
Soil Exposure Pathway Score (Ss)	0.00
Air Migration Pathway Score (Sa)	0.61

Site Score	13.33

NOTE

EPA uses the terms "facility," "site," and "release" interchangeably. The term "facility" is broadly defined in CERCLA to include any area where hazardous substances have "come to be located" (CERCLA Section 109(9)), and the listing process is not intended to define or reflect boundaries of such facilities or releases. Site names, and references to specific parcels or properties, are provided for general identification purposes only. Knowledge regarding the extent of sites will be refined as more information is developed during the RI/FS and even during implementation of the remedy.

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GROUND WATER MIGRATION PATHWAY SCORESHEET
Lakewood Township Landfill - 11/15/95

PAGE: 2

GROUND WATER MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release to an Aquifer Aquifer: Kirkwood-Cohansey		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	6
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	460
3. Likelihood of Release	550	460
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+02
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	10
Targets		
7. Nearest Well	50	2.00E+01
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	4.58E+02
8d. Population (lines 8a+8b+8c)	**	4.58E+02
9. Resources	5	0.00E+00
10. Wellhead Protection Area	20	0.00E+00
11. Targets (lines 7+8d+9+10)	**	4.78E+02
12. Targets (including overlaying aquifers)	**	4.78E+02
13. Aquifer Score	100	26.65
GROUND WATER MIGRATION PATHWAY SCORE (Sgw)	100	26.65

- * Maximum value applies to waste characteristics category.
** Maximum value not applicable.

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 SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
 Lakewood Township Landfill - 11/15/95

PAGE: 3

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release by Overland Flow		
2a. Containment	10	9
2b. Runoff	25	1
2c. Distance to Surface Water	25	9
2d. Potential to Release by Overland Flow [lines 2a(2b+2c)]	500	90
3. Potential to Release by Flood		
3a. Containment (Flood)	10	0
3b. Flood Frequency	50	0
3c. Potential to Release by Flood (lines 3a x 3b)	500	0
4. Potential to Release (lines 2d+3c)	500	90
5. Likelihood of Release	550	90
Waste Characteristics		
6. Toxicity/Persistence	*	1.00E+02
7. Hazardous Waste Quantity	*	100
8. Waste Characteristics	100	10
Targets		
9. Nearest Intake	50	0.00E+00
10. Population		
10a. Level I Concentrations	**	0.00E+00
10b. Level II Concentrations	**	0.00E+00
10c. Potential Contamination	**	0.00E+00
10d. Population (lines 10a+10b+10c)	**	0.00E+00
11. Resources	5	0.00E+00
12. Targets (lines 9+10d+11)	**	0.00E+00
13. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

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PREscore 3.0 - PRESCORE.TCL File 07/25/94 PAGE: 4
 SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
 Lakewood Township Landfill - 11/15/95

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
14. Likelihood of Release (same as line 5)	550	90
Waste Characteristics		
15. Toxicity/Persistence/Bioaccumulation	*	5.00E+05
16. Hazardous Waste Quantity	*	100
17. Waste Characteristics	1000	56
Targets		
18. Food Chain Individual	50	2.00E+00
19. Population		
19a. Level I Concentrations	**	0.00E+00
19b. Level II Concentrations	**	0.00E+00
19c. Pot. Human Food Chain Contamination	**	3.00E-04
19d. Population (lines 19a+19b+19c)	**	3.00E-04
20. Targets (lines 18+19d)	**	2.00E+00
21. HUMAN FOOD CHAIN THREAT SCORE	100	0.12

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

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 SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT SCORESHEET
 Lakewood Township Landfill - 11/15/95

PAGE: 5

SURFACE WATER OVERLAND/FLOOD MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
22. Likelihood of Release (same as line 5)	550	90
Waste Characteristics		
23. Ecosystem Toxicity/Persistence/Bioacc.	*	5.00E+07
24. Hazardous Waste Quantity	*	100
25. Waste Characteristics	1000	180
Targets		
26. Sensitive Environments		
26a. Level I Concentrations	**	0.00E+00
26b. Level II Concentrations	**	0.00E+00
26c. Potential Contamination	**	6.75E-01
26d. Sensitive Environments (lines 26a+26b+26c)	**	6.75E-01
27. Targets (line 26d)	**	6.75E-01
28. ENVIRONMENTAL THREAT SCORE	60	0.13
29. WATERSHED SCORE	100	0.25
30. SW: OVERLAND/FLOOD COMPONENT SCORE (Sof)	100	0.25

* Maximum value applies to waste characteristics category.
 ** Maximum value not applicable.

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PREscore 3.0 - PRESCORE.TCL File 07/25/94 PAGE: 6
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Lakewood Township Landfill - 11/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors DRINKING WATER THREAT	Maximum Value	Value Assigned
Likelihood of Release to Aquifer Aquifer: Kirkwood-Cohansey		
1. Observed Release	550	0
2. Potential to Release		
2a. Containment	10	10
2b. Net Precipitation	10	6
2c. Depth to Aquifer	5	5
2d. Travel Time	35	35
2e. Potential to Release [lines 2a(2b+2c+2d)]	500	460
3. Likelihood of Release	550	460
Waste Characteristics		
4. Toxicity/Mobility/Persistence	*	4.00E+01
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	6
Targets		
7. Nearest Intake	50	0.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	0.00E+00
8d. Population (lines 8a+8b+8c)	**	0.00E+00
9. Resources	5	0.00E+00
10. Targets (lines 7+8d+9)	**	0.00E+00
11. DRINKING WATER THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

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PREscore 3.0 - PRESCORE.TCL File 07/25/94 PAGE: 7
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Lakewood Township Landfill - 11/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors HUMAN FOOD CHAIN THREAT	Maximum Value	Value Assigned
Likelihood of Release		
12. Likelihood of Release (same as line 3)	550	460
Waste Characteristics		
13. Toxicity/Mobility/Persistence/Bioacc.	*	2.00E+05
14. Hazardous Waste Quantity	*	100
15. Waste Characteristics	1000	56
Targets		
16. Food Chain Individual	50	0.00E+00
17. Population		
17a. Level I Concentrations	**	0.00E+00
17b. Level II Concentrations	**	0.00E+00
17c. Pot. Human Food Chain Contamination	**	6.00E-05
17d. Population (lines 17a+17b+17c)	**	6.00E-05
18. Targets (lines 16+17d)	**	6.00E-05
19. HUMAN FOOD CHAIN THREAT SCORE	100	0.00

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

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PREscore 3.0 - PRESCORE.TCL File 07/25/94 PAGE: 8
GROUND WATER TO SURFACE WATER MIGRATION COMPONENT SCORESHEET
Lakewood Township Landfill - 11/15/95

GROUND WATER TO SURFACE WATER MIGRATION COMPONENT Factor Categories & Factors ENVIRONMENTAL THREAT	Maximum Value	Value Assigned
Likelihood of Release		
20. Likelihood of Release (same as line 3)	550	460
Waste Characteristics		
21. Ecosystem Tox./Mobility/Persist./Bioacc.	*	5.00E+04
22. Hazardous Waste Quantity	*	100
23. Waste Characteristics	1000	32
Targets		
24. Sensitive Environments		
24a. Level I Concentrations	**	0.00E+00
24b. Level II Concentrations	**	0.00E+00
24c. Potential Contamination	**	1.35E-01
24d. Sensitive Environments (lines 24a+24b+24c)	**	1.35E-01
25. Targets (line 24d)	**	1.35E-01
26. ENVIRONMENTAL THREAT SCORE	60	0.02
27. WATERSHED SCORE	100	0.02
28. SW: GW to SW COMPONENT SCORE (Sgs)	100	0.02

* Maximum value applies to waste characteristics category.
** Maximum value not applicable.

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 SOIL EXPOSURE PATHWAY SCORESHEET
 Lakewood Township Landfill - 11/15/95

PAGE: 9

SOIL EXPOSURE PATHWAY Factor Categories & Factors RESIDENT POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
1. Likelihood of Exposure	550	0
Waste Characteristics		
2. Toxicity	*	0.00E+00
3. Hazardous Waste Quantity	*	0
4. Waste Characteristics	100	0
Targets		
5. Resident Individual	50	0.00E+00
6. Resident Population		
6a. Level I Concentrations	**	0.00E+00
6b. Level II Concentrations	**	0.00E+00
6c. Resident Population (lines 6a+6b)	**	0.00E+00
7. Workers	15	0.00E+00
8. Resources	5	0.00E+00
9. Terrestrial Sensitive Environments	***	0.00E+00
10. Targets (lines 5+6c+7+8+9)	**	0.00E+00
11. RESIDENT POPULATION THREAT SCORE	**	0.00E+00

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

*** No specific maximum value applies, see HRS for details.

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PREscore 3.0 - PRESCORE.TCL File 07/25/94
 SOIL EXPOSURE PATHWAY SCORESHEET
 Lakewood Township Landfill - 11/15/95

PAGE: 10

SOIL EXPOSURE PATHWAY Factor Categories & Factors NEARBY POPULATION THREAT	Maximum Value	Value Assigned
Likelihood of Exposure		
12. Attractiveness/Accessibility	100	0.00E+00
13. Area of Contamination	100	0.00E+00
14. Likelihood of Exposure	500	0.00E+00
Waste Characteristics		
15. Toxicity	*	0.00E+00
16. Hazardous Waste Quantity	*	0
17. Waste Characteristics	100	0
Targets		
18. Nearby Individual	1	1.00E+00
19. Population Within 1 Mile	**	2.00E+00
20. Targets (lines 18+19)	**	3.00E+00
21. NEARBY POPULATION THREAT SCORE	**	0.00E+00
SOIL EXPOSURE PATHWAY SCORE (Ss)	100	0.00

* Maximum value applies to waste characteristics category.
 ** Maximum value not applicable.

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 AIR PATHWAY SCORESHEET
 Lakewood Township Landfill - 11/15/95

PAGE: 11

AIR MIGRATION PATHWAY Factor Categories & Factors	Maximum Value	Value Assigned
Likelihood of Release		
1. Observed Release	550	0
2. Potential to Release		
2a. Gas Potential to Release	500	196
2b. Particulate Potential to Release	500	196
2c. Potential to Release	500	196
3. Likelihood of Release	550	196
Waste Characteristics		
4. Toxicity/Mobility	*	1.00E+02
5. Hazardous Waste Quantity	*	100
6. Waste Characteristics	100	10
Targets		
7. Nearest Individual	50	7.00E+00
8. Population		
8a. Level I Concentrations	**	0.00E+00
8b. Level II Concentrations	**	0.00E+00
8c. Potential Contamination	**	1.80E+01
8d. Population (lines 8a+8b+8c)	**	1.80E+01
9. Resources	5	0.00E+00
10. Sensitive Environments		
10a. Actual Contamination	***	0.00E+00
10b. Potential Contamination	***	6.99E-01
10c. Sens. Environments(lines 10a+10b)	***	6.99E-01
11. Targets (lines 7+8d+9+10c)	**	2.57E+01
AIR MIGRATION PATHWAY SCORE (Sa)	100	6.11E-01

* Maximum value applies to waste characteristics category.

** Maximum value not applicable.

*** No specific maximum value applies, see HRS for details.

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

1. WASTESTREAM QUANTITY SUMMARY TABLE, SOURCE: Landfill

a. Wastestream ID	
b. Hazardous Constituent Quantity (C) (lbs.)	0.00
c. Data Complete?	NO
d. Hazardous Wastestream Quantity (W) (lbs.)	0.00
e. Data Complete?	NO
f. Wastestream Quantity Value (W/5,000)	0.00E+00

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

2. SOURCE HAZARDOUS WASTE QUANTITY FACTOR TABLE

a. Source ID	Landfill	
b. Source Type	Landfill	
c. Secondary Source Type	N.A.	
d. Source Vol.(yd3/gal) Source Area (ft2)	0.00	1128640.00
e. Source Volume/Area Value	3.32E+02	
f. Source Hazardous Constituent Quantity (HCQ) Value (sum of 1b)	0.00E+00	
g. Data Complete?	NO	
h. Source Hazardous Wastestream Quantity (WSQ) Value (sum of 1f)	0.00E+00	
i. Data Complete?	NO	
k. Source Hazardous Waste Quantity (HWQ) Value (2e, 2f, or 2h)	3.32E+02	

Source Hazardous Substances	Depth (feet)	Liquid	Concent.	Units
Benzene	> 2	NO	0.0E+00	ppm
Benzo(k)fluoranthene	> 2	NO	1.0E+00	ppm
Butylbenzyl phthalate	> 2	NO	1.7E+00	ppm
Chlorobenzene	> 2	NO	0.0E+00	ppm
Chloroform	> 2	NO	0.0E+00	ppm
Di-n-octyl phthalate	> 2	NO	1.6E+00	ppm
Dichlorobenzene, 1,4-	> 2	NO	0.0E+00	ppm
Diethyl phthalate	> 2	NO	4.3E-01	ppm
Endosulfan (I or II)	> 2	NO	2.3E-01	ppm
Ethyl ether	> 2	NO	0.0E+00	ppm
Toluene	> 2	NO	0.0E+00	ppm
Xylene, m-	> 2	NO	0.0E+00	ppm
Xylene, p-	> 2	NO	0.0E+00	ppm

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

Documentation for Source Type:

The Lakewood Township Landfill is municipally owned. The landfill accepted waste from 1973 through 1982 and closed in March of 1984.

Reference: 7, p. 13 of 98; Ref. 13, p. 7 of 20

Documentation for Source Hazardous Substances:

Five soil samples were collected at the Lakewood Township Landfill on October 17, 1985. There were no background samples collected. Soil sample #1 exhibited no detectable concentrations of contaminants and therefore it is used to represent background conditions. The following are the contaminants detected in soil and their respective concentrations (in mg/kg):

	(Background)				
	S-1	S-2	S-3	S-4	S-5
Diethyl Phthalate	ND	ND	ND	0.11J	0.43
Butylbenzyl phthalate	ND	ND	ND	ND	1.7
Dioctyl phthalate (di-n-octyl phthalate	ND	ND	ND	ND	1.6
Benzo(k)					
Endosulfan I	ND	ND	ND	ND	.23

The following contaminants, which qualify as an observed release to groundwater in on-site monitoring wells were used to evaluate the landfill since only limited soil sample data was available: benzene, chlorobenzene, 1,4-dichlorobenzene, diethyl ether (ethyl ether), toluene, xylenes and chloroform.

Ref. 29, pp. 1 through 85 of 85; Ref. 33, pp. 1 through 105 of 105;
Ref. 35, pp. 1 through 105 of 105

Reference:

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

Documentation for Source Volume:

Documentation to estimate hazardous waste quantity is not available.

Reference: N/A

Documentation for Source Area:

The area used for waste disposal was used to determine the source area. The area was measured as 25.91 acres using a planimeter and a scaled engineered drawing. The following is the conversion from acres to square feet:

25.91 acres x 43,560 square feet/acre = 1,128,640 square feet

Reference: Ref. 32, pp. ??????????

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

3. SITE HAZARDOUS WASTE QUANTITY SUMMARY

No. Source ID	Migration Pathways	Vol. or Area Value (2e)	Constituent or Wastestream Value (2f,2h)	Hazardous Waste Qty. Value (2k)
1 Landfill	GW-SW-SE-A	3.32E+02	0.00E+00	3.32E+02

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WASTE QUANTITY

Lakewood Township Landfill - 11/15/95

4. PATHWAY HAZARDOUS WASTE QUANTITY AND WASTE CHARACTERISTICS SUMMARY TABLE

Migration Pathway	Contaminant Values	HWQVs*	WCVs**
Ground Water	Toxicity/Mobility 1.00E+02	100	10
SW: Overland Flow, DW	Tox./Persistence 1.00E+02	100	10
SW: Overland Flow, HFC	Tox./Persis./Bioacc. 5.00E+05	100	56
SW: Overland Flow, Env	Etox./Persis./Bioacc. 5.00E+07	100	180
SW: GW to SW, DW	Tox./Persistence 4.00E+01	100	6
SW: GW to SW, HFC	Tox./Persis./Bioacc. 2.00E+05	100	56
SW: GW to SW, Env	Etox./Persis./Bioacc. 5.00E+04	100	32
Soil Exposure:Resident	Toxicity 0.00E+00	0	0
Soil Exposure: Nearby	Toxicity 0.00E+00	0	0
Air	Toxicity/Mobility 1.00E+02	100	10

* Hazardous Waste Quantity Factor Values

** Waste Characteristics Factor Category Values

Note: SW = Surface Water
 GW = Ground Water
 DW = Drinking Water Threat
 HFC = Human Food Chain Threat
 Env = Environmental Threat

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GROUND WATER PATHWAY AQUIFER SUMMARY
Lakewood Township Landfill - 11/15/95

PAGE: 18

No. Aquifer ID	Type	Overlying No.	Inter- Connected with	Likelihood of Release	Targets
1 Kirkwood-Cohansey	Non K	0	0	460	4.78E+02

Containment

No.	Source ID	HWQ Value	Containment Value
1	Landfill	3.32E+02	10
Containment Factor			10

Documentation for Ground Water Containment, Source Landfill:

The landfill is unlined, therefore it is assigned a groundwater containment factor value of 10.

Reference: 1, Table 3-2; Ref. 13, p. 5 of 20

Net Precipitation

Net Precipitation (inches)

N.A.

Documentation for Net Precipitation:

HRS Figure 3-2 was used to determine the net precipitation factor value.

Reference: 1, Figure 3-2

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Aquifer: Kirkwood-Cohansey

Type of Aquifer: Non Karst

Overlying Aquifer: 0

Interconnected with: 0

Documentation for Kirkwood-Cohansey Aquifer:

The Kirkwood-Cohansey aquifer is primarily a water table aquifer. The aquifer is composed of the Kirkwood formation and Cohansey sand. In the site area the Kirkwood Cohansey aquifer is between 50 and 100 feet thick and the formation is located between 0 and 100 feet below sea level.

The lithology of the Miocene aged Kirkwood formation varies, the coastal region contains thick clay beds with intermittent zones of sand and gravel. The inland regions where the site is located, contain fine to medium sand and silty sand, extensive clay can only be found at the basal portion of the formation.

The overlying Cohansey sand, also of Miocene age is characterized as a light colored quartz sand containing minor amounts of pebbly sand, fine to coarse-grained sand, silty and clayey sand and interbedded clay. Perched water tables and semi-confined conditions are possible in this formation.

There are seven monitoring wells installed on-site. The wells range in depth from 28 feet to 56 feet. The lithology of the wells are described as sand throughout the borings with two exceptions. Well # 5 had a one foot thick layer of clay located from 30 to 31 feet below ground surface and well # 7 had a 5 foot thick layer of sandy clay located from 12 to 17 feet below ground surface.

A well used by The United States Geological Survey (USGS) to determine the hydrogeologic framework of New Jersey is located close to the site. Well number 29-440 (40-05'-04" latitude and 74-13'-24" longitude) known as the NJ Water Company Lakewood 10 well is located slightly northeast of the site in Lakewood Township.

Site specific information on aquifers and confining layers below the site is not available. The well is close enough to the site that hydrogeologic conditions should be very similar, therefore information from this well was used in preparing the prescore for the Lakewood Township Landfill.

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At the NJ Water Company Lakewood 10 well the Kirkwood-Cohansey formation was less than 50 feet below the ground. There was a confining layer from 50 feet to 500 feet below ground. The Wenonah-Mount Laurel Aquifer was located from 500 to 550 feet below ground and the Englishtown Aquifer System was located from 550 to 800 feet below ground. Next the Merchantville-Woodbury confining layer extended from 800 to 1,100 feet below ground. The upper aquifer of the Potomac-Raritan-Magothy Aquifer system was located between 1,100 and 1,300 feet below ground and there is a confining layer from 1,300 to 1,400 feet below the ground. From 1,400 to 1,700 feet below the ground was the Potomac-Raritan-Magothy aquifer system and bedrock was located at approximately 1,700 feet. The groundwater movement is to the southwest toward Toms River.

Reference: 8, pp. 1 through 17 of 17; Ref. 9, pp. 7 through 12 of 12; Ref. 28, p. 3 of 28

Reference:

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified				

=====

Observed Release Factor	0
-------------------------	---

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POTENTIAL TO RELEASE

Containment

Containment Factor 10

Net Precipitation

Net Precipitation Factor 6

Depth to Aquifer

A. Depth of Hazardous Substances 48.00 feet

Documentation for Depth of Hazardous Substances:

Contaminants were detected in groundwater samples collected from MW-06 in concentrations qualifying as an observed release to groundwater, the depth to water at MW-06 is 48 feet.

Reference: 8, p. 8 of 17

B. Depth to Aquifer from Surface 14.00 feet

Documentation for Depth to Aquifer from Surface :

Well logs indicate that the shortest distance from ground surface to the top of the aquifer occurs at monitoring wells # 2 and # 3. Both wells had static water levels of 14 feet below grade.

Reference: 8, pp. 4 and 5 of 17

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C. Depth to Aquifer (B - A) 0.00 feet

Depth to Aquifer Factor 5

Travel Time

Are All Layers Karst? NO

Documentation for Karst Layers:

Karst layers are not mentioned in the interval between the lowest known point of hazardous substances and the top of the Kirkwood-Cohansey aquifer.

Reference: 9, pp. 7, 8, 9 and 12 of 12

Thickness of Layer(s) with Lowest Conductivity 4.00 feet

Documentation for Thickness of Layers with Lowest Conductivity:

The thickness of the lowest hydraulic conductivity layer was taken as the distance from 10 feet below ground surface to groundwater (4 feet at monitoring wells # 2 and #3).

Reference: 8, pp. 4 and 5 of 17

Hydraulic Conductivity (cm/sec) 1.0E-03

Documentation for Hydraulic Conductivity:

The layer from 10 feet below ground surface to groundwater (4 feet at monitoring well # 2 and # 3) is part of the Kirkwood-Cohansey formation. Soil of the Kirkwood-Cohansey formation is described as fine to medium sand and silty sand. Monitoring well logs from

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the site also describe the soil in this layer as sand. From HRS Table 3-6 the hydraulic conductivity of the layer is $1.0 * 10^{-3}$ cm/sec.

Reference: 1, Table 3-6; Ref. 9, pp. 7 and 12 of 12

Travel Time Factor	35
--------------------	----

Potential to Release Factor	460
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PREscore 3.0 - PRESCORE.TCL File 07/25/94
GROUND WATER PATHWAY WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

PAGE: 24

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
-----	-----	-----	-----
Benzene	100	1.00E+00	1.00E+02
Benzo(k) fluoranthene	100	2.00E-09	2.00E-07
Butylbenzyl phthalate	10	2.00E-05	2.00E-04
Chlorobenzene	100	1.00E-02	1.00E+00
Chloroform	100	1.00E+00	1.00E+02
Di-n-octyl phthalate	100	2.00E-07	2.00E-05
Dichlorobenzene, 1,4-	10	2.00E-03	2.00E-02
Diethyl phthalate	1	1.00E-02	1.00E-02
Endosulfan (I or II)	100	2.00E-05	2.00E-03
Ethyl ether	10	2.00E-01	2.00E+00
Toluene	10	1.00E-02	1.00E-01
Xylene, m-	1	1.00E-02	1.00E-02
Xylene, p-	10	1.00E-02	1.00E-01

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Hazardous Substances Found in an Observed Release

Well No.	Observed Release Hazardous Substance	Toxicity Value	Mobility Value	Toxicity/ Mobility Value
----------	---	-------------------	-------------------	--------------------------------

- N/A and/or data not specified

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Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+02
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	10

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Population by Well

No.	Well ID	Sample Type	Distance (miles)	Level of Contamination	Population
-----	---------	-------------	---------------------	---------------------------	------------

- N/A and/or data not specified

Level I Population Factor: 0.00

Level II Population Factor: 0.00

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Potential Contamination by Distance Category

Distance Category (miles)	Population	Value
> 0 to 1/4	15.0	1.70E+00
> 1/4 to 1/2	45.0	3.30E+00
> 1/2 to 1	405.0	1.67E+01
> 1 to 2	6780.0	9.39E+01
> 2 to 3	21038.0	2.12E+02
> 3 to 4	15383.0	1.31E+02

Potential Contamination Factor: 458.000

Documentation for Target Population > 0 to 1/4 mile Distance Category:

According to the 1990 Census Bureau there are fifteen people from 0 to 1/4 mile of the site utilizing private wells within this distance category. There are no known municipal wells within this distance category.

Ref. 4, p. 10 of 10; Ref. 31, p. 1 of 1; Ref. 38, pp. 1 through 21 of 21

Reference:

Documentation for Target Population > 1/4 to 1/2 mile Distance Category:

According to the 1990 Census Bureau there are forty five people from 1/4 to 1/2 mile of the site utilizing private wells for their potable water supply. There are no known municipal wells within this distance category.

Ref. 4, p. 10 of 10; Ref. 31, p. 1 of 1; Ref. 38, pp. 1 through 21 of 21

Reference:

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Documentation for Target Population > 1/2 to 1 mile Distance Category:

According to the 1990 Census Bureau there are 405 people from 1/2 to 1 mile of the site utilizing private wells for their potable water supply. There are no known municipal wells within this distance category.

Ref. 4, p. 9 and 10 of 10; Ref. 31, p. 1 of 1; Ref. 38, pp. 1 through 21 of 21

Reference:

Documentation for Target Population > 1 to 2 miles Distance Category:

According to the 1990 Census Bureau there are 2,541 people from 1 to 2 miles of the site utilizing private wells for their potable supply.

United Water Toms River utilizes one municipal well (well # 31) within the 1 to 2 mile radius of the site to supply drinking water to area residents.

The water company uses 20 wells to serve 84,786 residents. Well # 31 is screened in the Kirkwood-Cohanasey aquifer. To determine the population served by well # 31 the total population served was divided by the total number of wells.

$$84,786 \text{ residents} / 20 \text{ wells} = 4,239 \text{ residents/well}$$

WELL	LOCATION FROM SITE	POPULATION SERVED
----	-----	-----
31	1.2 miles southeast of the site	
Total Population Served by Municipal Wells		4,239
+ Population Served by Private Wells		2,541

Total Population for 1 to 2 Mile Radius		6,780

Note: No one municipal well supplied over 40% of the water to the system, therefore the population served by the municipal wells was evenly proportioned between the wells.

Reference: 4, p. 9 and 10 of 10; Ref. 38, pp. 1,2,20 and 21 of 21

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Documentation for Target Population > 2 to 3 miles Distance Category:

According to the 1990 Census Bureau there are 3,554 people from 2 to 3 miles of the site utilizing private wells for their potable water supply.

The Manchester Township Municipal Utilities Authority (MUA) utilizes two wells (wells # 7 and # 8) within the 2 to 3 mile radius of the site to supply drinking water to area residents.

Manchester Township MUA's wells # 7 and # 8 are screened in the Kirkwood-Cohansey formation.

Manchester Township MUA serves 20,000 residents utilizing a total of 9 wells. The population served by wells # 7 and # 8 was determined by dividing the total residents served by the total wells then multiplying by the number of wells located within the 2 to 3 mile radius.

$20,000 \text{ residents} / 9 \text{ wells} = 2,222 \text{ residents/well} * 2 \text{ wells} = 4,444 \text{ residents}$

The New Jersey-American Water Company utilizes 4 wells (wells 11, 12, 13 and 14) within the 2 to 3 mile radius of the site to supply drinking water to area residents.

New Jersey-American Water Company serves 32,600 residents utilizing a total of 10 wells. The population served by the four wells was determined by dividing the total residents served by the total well then multiplying by the number of wells located within the 2 to 3 mile radius.

$32,600 \text{ residents} / 10 \text{ wells} = 3,260 \text{ residents/well} * 4 \text{ wells} = 13,040 \text{ residents}$

WELL	LOCATION FROM SITE	POPULATION SERVED
----	-----	-----
7 MTMUA	2.1 miles southwest of the site	2,222
8 MTMUA	2.1 miles southwest of the site	2,222
11 NJAWC	2.1 miles east of the site	3,260
12 NJAWC	2.1 miles east of the site	3,260
13 NJAWC	2.1 miles east of the site	3,260
14 NJAWC	2.1 miles east of the site	3,260
Total Population Served by Municipal Wells		17,484
+ Population Served by Private Wells		3,554

Total Population for the 2 to 3 mile radius		21,038

Note: No one municipal well supplied over 40% of the water to the system, therefore the population served by the municipal wells was

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Reference: 4, p. 9 and 10 of 10; Ref. 38, pp. 1 through 7,17 and 21 of 21

Documentation for Target Population > 3 to 4 miles Distance Category:

According to the 1990 Census Bureau there are 4,102 people from 3 to 4 miles of the site utilizing private wells for their potable water supply.

The Manchester Township MUA utilizes 3 wells (wells 1, 2 and 4) within the 3 to 4 mile radius of the site to supply drinking water to area residents. The Lakewood Township MUA utilizes 5 wells (4, 5, 11, 13 and 14 within the 3 to 4 mile radius of the site to supply drinking water to area residents.

Manchester Township MUA's wells and Lakewood Township MUA's wells are screened in the Kirkwood-Cohansey aquifer.

Manchester Township MUA serves 20,000 residents utilizing a total of 9 wells. The population served by wells 1, 2 and 4 was determined by dividing the total residents served by the total wells then multiplying by the number of wells located within the 3 to 4 mile radius.

$20,000 \text{ residents} / 9 \text{ wells} = 2,222 \text{ residents/well} * 3 \text{ wells} = 6,666 \text{ residents}$

Lakewood Township MUA serves 12,000 residents utilizing a total of 13 wells. The population served by wells 4, 5, 11, 13 and 14 was determined by dividing the total residents served by the total wells then multiplying by the wells within the 2 to 3 mile radius.

$12,000 \text{ residents} / 13 \text{ wells} = 923 \text{ residents/well} * 5 \text{ wells} = 4,615 \text{ residents}$

WELL	LOCATION FROM SITE	POPULATION SERVED
1 MTMUA	3.6 miles southwest of the site	2,222
2 MTMUA	3.6 miles southwest of the site	2,222
4 MTMUA	3.3 miles southwest of the site	2,222
4 LTMUA	3.9 miles east of the site	923
5 LTMUA	3.5 miles northeast of the site	923
11 LTMUA	3.9 miles east of the site	923
13 LTMUA	3.7 miles east of the site	
14 LTMUA	3.8 miles southeast of the site	923

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Total Population Served by Municipal Wells	11,281
+ Population Served by Private Wells	4,102

Total Population for 3 to 4 mile radius	15,383
---	--------

Note: No one municipal well supplied over 40% of the water to the system, therefore the population served by the municipal wells was evenly proportioned between the wells.

Reference: 4, p. 9 and 10 of 10; Ref. 38, pp. 8 through 13,17 and 18 of 21

Nearest Well

Level of Contamination: Potential
Distance in miles: 0.25

Nearest Well Factor: 2.00E+01

Documentation for Nearest Well:

The nearest potable supply well to the landfill is located 1,300 feet north and upgradient of the site. The residence is located off the access road to the landfill near the intersection of Cross Street and Prospect Street. The well is 55 feet deep and serves three people.

Reference: 6. p. 6 of 8; Ref. 31, p. 1 of 1

Resources

Resource Use: NO

Resource Factor: 0.00E+00

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Documentation for Resources:

No resources identified

Reference: 6, p. 5 of 8

Wellhead Protection Area

No wellhead protection area

Wellhead Protection Area Factor: 0.00E+00

Documentation for Wellhead Protection Area:

Wellhead Protection areas have not been defined in New Jersey.

Reference: 15, p. 1 of 1

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PREscore 3.0 - PRESCORE.TCL File 07/25/94
SURFACE WATER PATHWAY SEGMENT SUMMARY
Lakewood Township Landfill - 11/15/95

PAGE: 34

No. Segment ID	Segment Type	Water Type	Start Point (mi)	End Point (mi)	Average Flow (cfs)
1 Grass Hollow Brook	River	Fresh	0.00	1.50	10
2 Toms River	River	Fresh	1.50	5.50	77
3 Toms River	River	Fresh	5.50	11.00	208
4 Toms River	River	Fresh	11.00	15.00	1001

Documentation for segment: Grass Hollow Brook:

The probable point of entry, via overland flow, occurs at the Grass Hollow Brook approximately 1,300 feet to the southeast of the landfill. The Grass Hollow Brook flows for approximately 1.5 miles before it discharges to Toms River. The United States Geological Survey does not have flow rate information for the Grass Hollow Brook, therefore professional judgement must be used to determine flow rate. The Grass Hollow Brook is a tributary to Toms River (77 cfs) and therefore it is expected to have a lower flow rate. Based on the fact that the Grass Hollow Brook is a tributary to Toms River and appears to be approximately the same size on the topographical map, the Grass Hollow Brook is expected to fall into the small to moderate stream category (10 cfs to 77 cfs).

Reference: 19, p. 1 of 1; Ref. 31, p. 1 of 1

Documentation for segment: Toms River:

This segment of the target distance limit begins where Grass Hollow Brook flows into Toms River and ends (5.5 miles from the PPE) where Union Brook flows into Toms River (because flow significantly increases at this intersection). The approximate volumetric flow rate for this segment of the target distance limit is 77 cubic feet/second.

Reference: 19, p. 1 of 1; Ref. 31, p. 1 of 1

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Documentation for segment: Toms River:

This segment of the target distance limit begins where Union Brook flows into Toms River and ends (11 miles from the PPE) where Toms River suddenly becomes significantly larger. This sudden increase is possibly due to tidal influences. The approximate volumetric flow rate for this segment is 208 cubic feet/second.

Reference: 12, p. 1 of 11; Ref. 31, p. 1 of 1

Documentation for segment: Toms River:

This segment of the target distance limit flows from where Toms River suddenly becomes significantly larger to the end of the target distance limit (15 miles from the PPE). Flow rate information for this segment of the target distance limit is not available. Based on its size on the topographical map as compared to the other segments, this segment of the target distance limit most likely falls into the large stream to river category (1,000 to 10,000 cubic feet/second).

Reference: 31, p. 1 of 1

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OBSERVED RELEASE

No. Sample ID	Sample Type	Distance (miles)	Level of Contamination		
			DW	HFC	Env

- N/A and/or data not specified

=====

Observed Release Factor	0
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POTENTIAL TO RELEASE

Potential to Release by Overland Flow

Containment

No.	Source ID	HWQ Value	Containment Value
1	Landfill	3.32E+02	9

=====

Containment Factor: 9

Documentation for Overland Flow Containment, Source Landfill:

The landfill was covered during phase I of the closure. The landfill has a runoff control system consisting of drainage basins and swales, however evidence of surface water by-passing the system was noted during Ebasco's site reconnaissance. No run-on control system was noted during Ebasco's site reconnaissance.

Reference: 6, p. 1 through 8 of 8; Ref. 13, p. 7 of 20

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Distance to Surface Water

Distance to Surface Water: 1300.0 feet

Distance to Surface Water Factor: 9

Documentation for Distance to Surface Water:

The Grass Hollow Brook is located approximately 1,300 feet to the southeast of the landfill.

Reference: 31, p. 1 of 1

Runoff

A. Drainage Area: 25.9 acres

Documentation for Drainage Area:

The drainage area for the site was taken as the entire area where waste disposal took place (25.91 acres). Run-off control measures have been implemented at the landfill, however, as noted during the Ebasco site reconnaissance surface water is escaping the system and leaving the landfill.

Ref. 6, pp. 3 and 4 of 8; Ref. 13, p. 7 of 20; Ref. 30, pp. 1, 13 and 14 of 14

Reference:

B. 2-year, 24-hour Rainfall: 3.5 inches

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Documentation for Rainfall:

The 2-year, 24-hour rainfall for the site is 3.5 inches.

Reference: 11, p. 2 of 2

C. Soil Group: A
Coarse-textured soils with high infiltration rates

Documentation for Soil Group:

Well logs from the installation of seven monitoring well indicate that the on-site soil is predominantly sand.

Reference: 8, pp. 1 through 17 of 17

Runoff Factor: 1

=====

Potential to Release by Overland Flow Factor: 90

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Potential to Release by Flood

No. Source ID	HWQ Value	Flood Containment Value	Flood Frequency Value	Potential to Release by Flood

- N/A and/or data not specified				

=====

Potential to Release by Flood Factor: 0

Documentation for Flood Containment, Source Landfill:

Documentation could not be found that the landfill is designed, constructed, operated and maintained to prevent a washout of hazardous substances by a flood.

Reference: 1, Table 4-8; Ref. 13, pp. 1 through 20 of 20

Documentation for Flood Frequency, Source Landfill:

The Lakewood Township Landfill is not located in a flood plain.

Reference: 10, p. 3 of 3

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NOTE
10/1

SW PATHWAY: OVERLAND/FLOOD DRINKING WATER THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
Benzene	100	4.00E-01	4.00E+01
Benzo(k)fluoranthene	0	1.00E+00	0.00E+00
Butylbenzyl phthalate	10	1.00E+00	1.00E+01
Chlorobenzene	100	7.00E-04	7.00E-02
Chloroform	100	4.00E-01	4.00E+01
Di-n-octyl phthalate	100	1.00E+00	1.00E+02
Dichlorobenzene, 1,4-	10	4.00E-01	4.00E+00
Diethyl phthalate	1	1.00E+00	1.00E+00
Endosulfan (I or II)	100	1.00E+00	1.00E+02
Ethyl ether	10	4.00E-01	4.00E+00
Toluene	10	4.00E-01	4.00E+00
Xylene, m-	1	4.00E-01	4.00E-01
Xylene, p-	10	4.00E-01	4.00E+00

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Hazardous Substances Found in an Observed Release

Sample Observed Release No.	Hazardous Substance	Toxicity Value	Persistence Value	Toxicity/ Persistence Value
--------------------------------	---------------------	-------------------	----------------------	-----------------------------------

- N/A and/or data not specified

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Toxicity/Persistence Value from Source Hazardous Substances:	1.00E+02
Toxicity/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	10

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Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

-
- N/A and/or data not specified

Most Distant Level II Sample

-
- N/A and/or data not specified

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Lakewood Township Landfill - 11/15/95

Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
--------	--	------------

- N/A and/or data not specified

=====

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

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Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
--------	--	------------

- N/A and/or data not specified

=====

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT DRINKING WATER THREAT TARGETS
Lakewood Township Landfill - 11/15/95

Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
-----------	------------------------------	----------------------

- N/A and/or data not specified

Type of Surface Water Body	Total Population	Dilution-Weighted Population
-------------------------------	---------------------	---------------------------------

- N/A and/or data not specified

=====

Dilution-Weighted Population Served by Potentially Contaminated Intakes:	0.0
---	-----

Potential Contamination Factor:	0.0
---------------------------------	-----

Nearest Intake

Location of Nearest Drinking Water Intake: N.A.

Nearest Intake Factor: 0.00

Resources

Resource Use: NO

Resource Value: 0.00E+00

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Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
Benzene	100	4.00E-01	5.00E+03	2.00E+05
Benzo(k)fluoranthene	0	1.00E+00	5.00E+04	0.00E+00
Butylbenzyl phthalate	10	1.00E+00	5.00E+02	5.00E+03
Chlorobenzene	100	7.00E-04	5.00E+01	3.50E+00
Chloroform	100	4.00E-01	5.00E+00	2.00E+02
Di-n-octyl phthalate	100	1.00E+00	5.00E+02	5.00E+04
Dichlorobenzene, 1,4-	10	4.00E-01	5.00E+01	2.00E+02
Diethyl phthalate	1	1.00E+00	5.00E+02	5.00E+02
Endosulfan (I or II)	100	1.00E+00	5.00E+03	5.00E+05
Ethyl ether	10	4.00E-01	5.00E-01	2.00E+00
Toluene	10	4.00E-01	5.00E+01	2.00E+02
Xylene, m-	1	4.00E-01	5.00E+02	2.00E+02
Xylene, p-	10	4.00E-01	5.00E+01	2.00E+02

Hazardous Substances Found in an Observed Release

Sample Observed Release No. Hazardous Substance	Toxicity Value	Persistence Value	Bio- accum. Value	Toxicity/ Persistence/ Bioaccum. Value
--	-------------------	----------------------	-------------------------	---

- N/A and/or data not specified

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Toxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+05
Toxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Persistence/Bioaccumulation Factor:	5.00E+05
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	56

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Lakewood Township Landfill - 11/15/95

Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

-
- N/A and/or data not specified

Most Distant Level II Sample

-
- N/A and/or data not specified

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Lakewood Township Landfill - 11/15/95Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
---------	-------------------------------	--------------------------------------

- N/A and/or data not specified
=====

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Lakewood Township Landfill - 11/15/95Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value

- N/A and/or data not specified		

=====

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT HUMAN FOOD CHAIN THREAT TARGETS
Lakewood Township Landfill - 11/15/95Potential Contamination

Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 Toms River	1.0	River	77	0.0	1.00E-01	3.00E-03

=====

Sum of (Pi*Di): 3.00E-03

Potential Human Food Chain Contamination Factor: 3.00E-04

Documentation for Grass Hollow Brook Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

Reference: 14, pp. 1 through 6 of 6

Documentation for Toms River Fishery:

There were brook trout stocked in the Toms River between Rt. 528 and Rt. 571 in 1992. These two points fall within segment # 2 of the target distance limit. Since a reasonable fish production estimate could not be determined a estimate of 1 pound was used to evaluate the site.

Reference: 14, p. 4 of 6

Documentation for Toms River Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

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Reference: 14, pp. 1 through 6 of 6

Documentation for Toms River Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

Reference: 14, pp. 1 through 6 of 6

Food Chain Individual

Location of Nearest Fishery: Toms River
Distance from the Probable Point of Entry: 1.50 miles
Type of Surface Water Body: River
Dilution Weight: 0.1000000
Level of Contamination: Potential

Food Chain Individual Factor: 2.00

Documentation for Toms River:

This segment of the target distance limit begins where Grass Hollow Brook flows into Toms River and ends (5.5 miles from the PPE) where Union Brook flows into Toms River (because flow significantly increases at this intersection). The approximate volumetric flow rate for this segment of the target distance limit is 77 cubic feet/second.

Reference: 19, p. 1 of 1; Ref. 31, p. 1 of 1

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Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
Benzene	100	4.00E-01	5.00E+02	2.00E+04
Benzo(k)fluoranthene	0	1.00E+00	5.00E+04	0.00E+00
Butylbenzyl phthalate	100	1.00E+00	5.00E+02	5.00E+04
Chlorobenzene	1000	7.00E-04	5.00E+01	3.50E+01
Chloroform	10	4.00E-01	5.00E+00	2.00E+01
Di-n-octyl phthalate	0	1.00E+00	5.00E+02	0.00E+00
Dichlorobenzene, 1,4-	100	4.00E-01	5.00E+01	2.00E+03
Diethyl phthalate	10000	1.00E+00	5.00E+02	5.00E+06
Endosulfan (I or II)	10000	1.00E+00	5.00E+03	5.00E+07
Ethyl ether	1	4.00E-01	5.00E-01	2.00E-01
Toluene	100	4.00E-01	5.00E+01	2.00E+03
Xylene, m-	100	4.00E-01	5.00E+02	2.00E+04
Xylene, p-	100	4.00E-01	5.00E+01	2.00E+03

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SW PATHWAY: OVERLAND FLOW/FLOOD ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Hazardous Substances Found in an Observed Release

Sample Observed Release No. Hazardous Substance	Eco- toxicity Value	Persistence Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
--	---------------------------	----------------------	-------------------------	--

- N/A and/or data not specified

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Ecotoxicity/Persistence/Bioaccumulation Value from Source Hazardous Substances:	5.00E+07
Ecotoxicity/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Ecotoxicity/Persistence/Bioaccumulation Factor:	5.00E+07
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	180

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Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

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Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
-----------------------	---	-----------------------------------

- N/A and/or data not specified

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
---------	--	------------------------------

- N/A and/or data not specified

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

=====

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

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SW PATHWAY: OVERLAND FLOW/FLOOD COMPONENT ENVIRONMENTAL THREAT TARGETS
Lakewood Township Landfill - 11/15/95Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
-----------------------	---	-----------------------------------

- N/A and/or data not specified

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
---------	--	------------------------------

- N/A and/or data not specified

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

=====

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

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Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value

River	1 Wetlands	1.50	50
River	2 Wetlands	6.00	150
River	3 Wetlands	6.00	150
River	4 Wetlands	4.50	150

Documentation for Sensitive Environment Wetlands:

National Wetland Inventory maps were reviewed to determine that there are 1.5 miles of wetlands frontage located along the Grass Hollow Brook from its beginning to where it flows into the Toms River.

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetlands Inventory Maps were reviewed to determine that there are 6 miles of wetlands located along Toms River from where Grass Hollow Brook flows into Toms River to where Union Brook flows into Toms River.

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Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetland Inventory Maps were used to determine that there are 6 miles of wetlands frontage on Toms River from where Union Brook flows into Toms River to where Toms River suddenly becomes much larger (approximately 11 miles from the PPE) .

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetlands Inventory Maps were used to determine that there are 4.5 miles of wetlands frontage on Toms River from where Toms River suddenly becomes significantly larger (approximately 11 miles from the PPE) to the end of the target distance limit.

Reference: 32, pp. 1 and 2 of 2

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Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Small to Moderate Stream	0	50	1.00E-01	5.00E+00
Moderate to Large Stream	0	150	1.00E-02	1.50E+00
Large Stream to River	0	250	1.00E-03	2.50E-01

Sum of Dj(Wj+Sj): 6.75E+00
 Sum of Dj(Wj+Sj)/10: 6.75E-01

=====

Potential Contamination Sensitive Environment Factor: 6.75E-01

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PREscore 3.0 - PRESCORE.TCL File 07/25/94
SURFACE WATER PATHWAY GW TO SW CONTAINMENT SUMMARY
Lakewood Township Landfill - 11/15/95

PAGE: 65

Containment

No.	Source ID	HWQ Value	Containment Value
1	Landfill	3.32E+02	10

=====

Containment Factor		10
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Documentation for Ground Water Containment, Source Landfill:

The landfill is unlined, therefore it is assigned a groundwater containment factor value of 10.

Reference: 1, Table 3-2; Ref. 13, p. 5 of 20

Net Precipitation

Net Precipitation (inches)	0.00
----------------------------	------

Documentation for Net Precipitation:

HRS Figure 3-2 was used to determine the net precipitation factor value.

Reference: 1, Figure 3-2

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Aquifer: Kirkwood-Cohansey

Type of Aquifer: Non Karst

Overlying Aquifer: 0

Interconnected with: 0

Documentation for Kirkwood-Cohansey Aquifer:

The Kirkwood-Cohansey aquifer is primarily a water table aquifer. The aquifer is composed of the Kirkwood formation and Cohansey sand. In the site area the Kirkwood Cohansey aquifer is between 50 and 100 feet thick and the formation is located between 0 and 100 feet below sea level.

The lithology of the Miocene aged Kirkwood formation varies, the coastal region contains thick clay beds with intermittent zones of sand and gravel. The inland regions where the site is located, contain fine to medium sand and silty sand, extensive clay can only be found at the basal portion of the formation.

The overlying Cohansey sand, also of Miocene age is characterized as a light colored quartz sand containing minor amounts of pebbly sand, fine to coarse-grained sand, silty and clayey sand and interbedded clay. Perched water tables and semi-confined conditions are possible in this formation.

There are seven monitoring wells installed on-site. The wells range in depth from 28 feet to 56 feet. The lithology of the wells are described as sand throughout the borings with two exceptions. Well # 5 had a one foot thick layer of clay located from 30 to 31 feet below ground surface and well # 7 had a 5 foot thick layer of sandy clay located from 12 to 17 feet below ground surface.

A well used by The United States Geological Survey (USGS) to determine the hydrogeologic framework of New Jersey is located close to the site. Well number 29-440 (40-05'-04" latitude and 74-13'-24" longitude) known as the NJ Water Company Lakewood 10 well is located slightly northeast of the site in Lakewood Township.

Site specific information on aquifers and confining layers below the site is not available. The well is close enough to the site that hydrogeologic conditions should be very similar, therefore information from this well was used in preparing the prescore for the Lakewood Township Landfill.

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At the NJ Water Company Lakewood 10 well the Kirkwood-Cohansey formation was less than 50 feet below the ground. There was a confining layer from 50 feet to 500 feet below ground. The Wenonah-Mount Laurel Aquifer was located from 500 to 550 feet below ground and the Englishtown Aquifer System was located from 550 to 800 feet below ground. Next the Merchantville-Woodbury confining layer extended from 800 to 1,100 feet below ground. The upper aquifer of the Potomac-Raritan-Magothy Aquifer system was located between 1,100 and 1,300 feet below ground and there is a confining layer from 1,300 to 1,400 feet below the ground. From 1,400 to 1,700 feet below the ground was the Potomac-Raritan-Magothy aquifer system and bedrock was located at approximately 1,700 feet. The groundwater movement is to the southwest toward Toms River.

Reference: 8, pp. 1 through 17 of 17; Ref. 9, pp. 7 through 12 of 12; Ref. 28, p. 3 of 28

Reference:

OBSERVED RELEASE

No.	Well ID	Well Type	Distance (miles)	Level of Contamination

- N/A and/or data not specified				

=====

Observed Release Factor	0
-------------------------	---

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POTENTIAL TO RELEASE

Ground Water to Surface Water Angle

Probable Point of Entry 0.25 miles

Angle Theta 85

Containment

Containment Factor 10

Net Precipitation

Net Precipitation Factor 6

Depth to Aquifer

A. Depth of Hazardous Substances 48.00 feet

Documentation for Depth of Hazardous Substances:

Contaminants were detected in groundwater samples collected from MW-06 in concentrations qualifying as an observed release to groundwater, the depth to water at MW-06 is 48 feet.

Reference: 8, p. 8 of 17

B. Depth to Aquifer from Surface 14.00 feet

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Documentation for Depth to Aquifer from Surface :

Well logs indicate that the shortest distance from ground surface to the top of the aquifer occurs at monitoring wells # 2 and # 3. Both wells had static water levels of 14 feet below grade.

Reference: 8, pp. 4 and 5 of 17

C. Depth to Aquifer (B - A)	0.00	feet
Depth to Aquifer Factor	5	
Travel Time		

Are All Layers Karst?	NO	

Documentation for Karst Layers:

Karst layers are not mentioned in the interval between the lowest known point of hazardous substances and the top of the Kirkwood-Cohansey aquifer.

Reference: 9, pp. 7, 8, 9 and 12 of 12

Thickness of Layer(s) with Lowest Conductivity	4.00	feet
--	------	------

Documentation for Thickness of Layers with Lowest Conductivity:

The thickness of the lowest hydraulic conductivity layer was taken as the distance from 10 feet below ground surface to groundwater (4 feet at monitoring wells # 2 and #3).

Reference: 8, pp. 4 and 5 of 17

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Hydraulic Conductivity (cm/sec)

1.0E-03

Documentation for Hydraulic Conductivity:

The layer from 10 feet below ground surface to groundwater (4 feet at monitoring well # 2 and # 3) is part of the Kirkwood-Cohansey formation. Soil of the Kirkwood-Cohansey formation is described as fine to medium sand and silty sand. Monitoring well logs from the site also describe the soil in this layer as sand. From HRS Table 3-6 the hydraulic conductivity of the layer is 1.0×10^{-3} cm/sec.

Reference: 1, Table 3-6; Ref. 9, pp. 7 and 12 of 12

Travel Time Factor

35

=====

Potential to Release Factor

460

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SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Factor Value	Persist. Value	Mobility Value	Toxicity/ Mobility/ Persistence
Benzene	100	4.00E-01	1.00E+00	4.00E+01
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	0.00E+00
Butylbenzyl phthalate	10	1.00E+00	2.00E-05	2.00E-04
Chlorobenzene	100	7.00E-04	1.00E-02	7.00E-04
Chloroform	100	4.00E-01	1.00E+00	4.00E+01
Di-n-octyl phthalate	100	1.00E+00	2.00E-07	2.00E-05
Dichlorobenzene, 1,4-	10	4.00E-01	2.00E-03	8.00E-03
Diethyl phthalate	1	1.00E+00	1.00E-02	1.00E-02
Endosulfan (I or II)	100	1.00E+00	2.00E-05	2.00E-03
Ethyl ether	10	4.00E-01	2.00E-01	8.00E-01
Toluene	10	4.00E-01	1.00E-02	4.00E-02
Xylene, m-	1	4.00E-01	1.00E-02	4.00E-03
Xylene, p-	10	4.00E-01	1.00E-02	4.00E-02

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Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Toxicity Factor Value	Persist. Value	Toxicity/ Persistence
--	-----------------------------	-------------------	--------------------------

- N/A and/or data not specified

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SW PATHWAY: GW TO SW COMPONENT DRINKING WATER THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Toxicity/Mobility/Persistence Value from Source Hazardous Substances:	4.00E+01
Toxicity/Mobility/Persistence Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence Factor:	4.00E+01
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	6

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Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

-
- N/A and/or data not specified

Most Distant Level II Sample

-
- N/A and/or data not specified

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Level I Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
--------	--	------------

- N/A and/or data not specified

=====

Population Served by Level I Intakes: 0.0

Level I Population Factor: 0.00E+00

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Level II Concentrations

Intake	Distance Along the In-water Segment from the Probable Point of Entry (miles)	Population
--------	--	------------

- N/A and/or data not specified

=====

Population Served by Level II Intakes: 0.0

Level II Population Factor: 0.00E+00

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Potential Contamination

Intake ID	Average Annual Flow (cfs)	Population Served
-----------	------------------------------	----------------------

- N/A and/or data not specified

Type of Surface Water Body	Total Population	Dilution-Weighted Population
-------------------------------	---------------------	---------------------------------

- N/A and/or data not specified

=====

Dilution-Weighted Population Served by Potentially Contaminated Intakes:	0.0
---	-----

Potential Contamination Factor:	0.0
---------------------------------	-----

Nearest Intake

Location of Nearest Drinking Water Intake: N.A.

Nearest Intake Factor: 0.00

Resources

Resource Use: NO

Resource Value: 0.00E+00

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SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Value	Persist. Value	Mobility Value	Bio- accum. Value	Tox./Mobil./ Persistence/ Bioaccum. Value
Benzene	100	4.00E-01	1.00E+00	5.00E+03	2.00E+05
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Butylbenzyl phthalate	10	1.00E+00	2.00E-05	5.00E+02	1.00E-01
Chlorobenzene	100	7.00E-04	1.00E-02	5.00E+01	3.50E-02
Chloroform	100	4.00E-01	1.00E+00	5.00E+00	2.00E+02
Di-n-octyl phthalate	100	1.00E+00	2.00E-07	5.00E+02	1.00E-02
Dichlorobenzene, 1,4-	10	4.00E-01	2.00E-03	5.00E+01	4.00E-01
Diethyl phthalate	1	1.00E+00	1.00E-02	5.00E+02	5.00E+00
Endosulfan (I or II)	100	1.00E+00	2.00E-05	5.00E+03	1.00E+01
Ethyl ether	10	4.00E-01	2.00E-01	5.00E-01	4.00E-01
Toluene	10	4.00E-01	1.00E-02	5.00E+01	2.00E+00
Xylene, m-	1	4.00E-01	1.00E-02	5.00E+02	2.00E+00
Xylene, p-	10	4.00E-01	1.00E-02	5.00E+01	2.00E+00

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SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Hazardous Substances Found in an Observed Release

Observed Release	Toxicity	Persist.	Bio-	Toxicity/
Hazardous	Value	Value	accum.	Persistence
Substance			Value	Bioaccum.
				Value

- N/A and/or data not specified

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SW PATHWAY: GW TO SW COMPONENT HUMAM FOOD CHAIN THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Toxicity/Mobility/Persistence/Bioaccumulation Value from Source Hazardous Substances:	2.00E+05
Toxicity/Mobility/Persistence/Bioaccumulation Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility/Persistence/Bioaccumulation Factor:	2.00E+05
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	56

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Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

-
- N/A and/or data not specified

Most Distant Level II Sample

-
- N/A and/or data not specified

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Level I Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value
---------	-------------------------------	--------------------------------------

- N/A and/or data not specified

=====

Sum of Human Food Chain Population Values: 0.00E+00

Level I Concentrations Factor: 0.00E+00

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Level II Concentrations

Fishery	Annual Production (pounds)	Human Food Chain Population Value

- N/A and/or data not specified		

=====

Sum of Human Food Chain Population Values: 0.00E+00

Level II Concentrations Factor: 0.00E+00

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Potential Contamination

Fishery	Annual Production (pounds)	Type of Surface Water Body	Average Annual Flow (cfs)	Pop. Value (Pi)	Dilution Weight (Di)	Pi*Di
2 Toms River	1.0	River	77	0.0	2.00E-02	6.00E-04

=====

Sum of (Pi*Di): 6.00E-04

Potential Human Food Chain Contamination Factor: 6.00E-05

Documentation for Grass Hollow Brook Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

Reference: 14, pp. 1 through 6 of 6

Documentation for Toms River Fishery:

There were brook trout stocked in the Toms River between Rt. 528 and Rt. 571 in 1992. These two points fall within segment # 2 of the target distance limit. Since a reasonable fish production estimate could not be determined a estimate of 1 pound was used to evaluate the site.

Reference: 14, p. 4 of 6

Documentation for Toms River Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

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Reference: 14, pp. 1 through 6 of 6

Documentation for Toms River Fishery:

Fish stocking in this segment of the target distance limit could not be documented.

Reference: 14, pp. 1 through 6 of 6

Food Chain Individual

Location of Nearest Fishery: Toms River
Distance from the Probable Point of Entry: 1.50 miles
Type of Surface Water Body: River
Dilution Weight: 0.0200000
Level of Contamination: Potential

Food Chain Individual Factor: 2.00

Documentation for Toms River:

This segment of the target distance limit begins where Grass Hollow Brook flows into Toms River and ends (5.5 miles from the PPE) where Union Brook flows into Toms River (because flow significantly increases at this intersection). The approximate volumetric flow rate for this segment of the target distance limit is 77 cubic feet/second.

Reference: 19, p. 1 of 1; Ref. 31, p. 1 of 1

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SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Eco- toxicity Value	Persist. Value	Mob. Value	Bio- accum. Value	Ecotoxicity/ Mobility/ Persistence/ Bioaccum. Value
Benzene	100	4.00E-01	1.00E+00	5.00E+02	2.00E+04
Benzo(k)fluoranthene	0	1.00E+00	2.00E-09	5.00E+04	0.00E+00
Butylbenzyl phthalate	100	1.00E+00	2.00E-05	5.00E+02	1.00E+00
Chlorobenzene	1000	7.00E-04	1.00E-02	5.00E+01	3.50E-01
Chloroform	10	4.00E-01	1.00E+00	5.00E+00	2.00E+01
Di-n-octyl phthalate	0	1.00E+00	2.00E-07	5.00E+02	0.00E+00
Dichlorobenzene, 1,4-	100	4.00E-01	2.00E-03	5.00E+01	4.00E+00
Diethyl phthalate	10000	1.00E+00	1.00E-02	5.00E+02	5.00E+04
Endosulfan (I or II)	10000	1.00E+00	2.00E-05	5.00E+03	1.00E+03
Ethyl ether	1	4.00E-01	2.00E-01	5.00E-01	4.00E-02
Toluene	100	4.00E-01	1.00E-02	5.00E+01	2.00E+01
Xylene, m-	100	4.00E-01	1.00E-02	5.00E+02	2.00E+02
Xylene, p-	100	4.00E-01	1.00E-02	5.00E+01	2.00E+01

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SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Hazardous Substances Found in an Observed Release

Observed Release Hazardous Substance	Eco- toxicity Value	Persist. Value	Bio- accum. Value	Ecotoxicity/ Persistence/ Bioaccum. Value
--	---------------------------	-------------------	-------------------------	--

- N/A and/or data not specified

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SW PATHWAY: GW TO SW COMPONENT ENVIRONMENTAL THREAT WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

Ecotoxicity/Mobility/Persistence/Bioaccumulation Value from Source Substances:	5.00E+04
Ecotoxicity/Mobility/Persistence/Bioaccumulation Value from Observed Hazardous Substances:	0.00E+00
Ecotoxicity/Mobility/Persistence/Bioaccumulation Factor:	5.00E+04
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	32

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Level I Concentrations

- N/A and/or data not specified

Level II Concentrations

- N/A and/or data not specified

Most Distant Level I Sample

- N/A and/or data not specified

Most Distant Level II Sample

- N/A and/or data not specified

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Level I Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
-----------------------	---	-----------------------------------

- N/A and/or data not specified

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
---------	--	------------------------------

- N/A and/or data not specified

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0
=====

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level I Concentrations Factor: 0.00E+00

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Level II Concentrations

Sensitive Environment	Distance from Probable Point of Entry to Sensitive Env. (miles)	Sensitive Environment Value
-----------------------	---	-----------------------------------

- N/A and/or data not specified

Sum of Sensitive Environments Values: 0

Wetlands

Wetland	Distance from Probable Point of Entry to Wetland (miles)	Wetlands Frontage (miles)
---------	--	------------------------------

- N/A and/or data not specified

Total Wetlands Frontage: 0.00 Miles Total Wetlands Value: 0

=====

Sum of Sensitive Environments Value + Wetlands Value: 0.00E+00

Level II Concentrations Factor: 0.00E+00

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Potential Contamination

Sensitive Environments

Type of Surface Water Body	Sensitive Environment	Sensitive Environment Value
-------------------------------	-----------------------	-----------------------------------

Wetlands

Type of Surface Water Body	Sensitive Environment	Wetlands Frontage	Wetlands Value
River	1 Wetlands	1.50	50
River	2 Wetlands	6.00	150
River	3 Wetlands	6.00	150
River	4 Wetlands	4.50	150

Documentation for Sensitive Environment Wetlands:

National Wetland Inventory maps were reviewed to determine that there are 1.5 miles of wetlands frontage located along the Grass Hollow Brook from its beginning to where it flows into the Toms River.

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetlands Inventory Maps were reviewed to determine that there are 6 miles of wetlands located along Toms River from where Grass Hollow Brook flows into Toms River to where Union Brook flows into Toms River.

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Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetland Inventory Maps were used to determine that there are 6 miles of wetlands frontage on Toms River from where Union Brook flows into Toms River to where Toms River suddenly becomes much larger (approximately 11 miles from the PPE) .

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands:

National Wetlands Inventory Maps were used to determine that there are 4.5 miles of wetlands frontage on Toms River from where Toms River suddenly becomes significantly larger (approximately 11 miles from the PPE) to the end of the target distance limit.

Reference: 32, pp. 1 and 2 of 2

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Type of Surface Water Body	Sum of Sens. Environment Values(Sj)	Sum of Wetland Frontage Values(Wj)	Dilution Weight (Dj)	Dj(Wj+Sj)
Small to Moderate Stream	0	50	2.00E-02	1.00E+00
Moderate to Large Stream	0	150	2.00E-03	3.00E-01
Large Stream to River	0	250	2.00E-04	5.00E-02

Sum of Dj(Wj+Sj): 1.35E+00
 Sum of Dj(Wj+Sj)/10: 1.35E-01

=====

Potential Contamination Sensitive Environment Factor: 1.35E-01

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Likelihood of Exposure

No. Source ID	Level of Contamination
---------------	------------------------

- N/A and/or data not specified	

Likelihood of Exposure Factor:	0

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Source: 0 (null)

Source Hazardous Waste Quantity Value: 0.00

Hazardous Substance	Toxicity Value
------------------------	-------------------

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Lakewood Township Landfill - 11/15/95

Sum of Source Hazardous Waste Quantity Values:

0.00E+00

Documentation for Level I Population:

N/A

Reference: N/A

Waste Characteristics Factor Category:

0

Documentation for Level II Population:

N/A

Reference: N/A

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Targets

Level I Population: 0.0 Value: 0.00

Documentation for Workers:

There are no workers present at the Lakewood Township Landfill.

Reference: 6, p. 5 of 8

Level II Population: 0.0 Value: 0.00

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Documentation for Resources:

There were no commercial agriculture, commercial silviculture, or commercial livestock production/grazing identified during the Ebasco site reconnaissance.

Reference: 6, pp. 1 through 8 of 8

- N/A and/or data not specified

Resident Individual: (null) Value: 0.00

Terrestrial Sensitive Environment Value

- N/A and/or data not specified
=====

Terrestrial Sensitive Environments Factor: 1.30485992031043747000000000000000

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Lakewood Township Landfill - 11/15/95

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SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT LIKELIHOOD OF EXPOSURE

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Lakewood Township Landfill - 11/15/95

Likelihood of Exposure

No.	Source ID	Level of Contamination	Attractiveness/ Accessibility	Area of Contam. (sq. feet)
0	V & G & 1-^ & G & W F ~ N		9504	774910509

0	(null)	-t6.0E-154	1.7E-76	9.7E+246	♥ F
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SOIL EXPOSURE PATHWAY NEARBY POPULATION THREAT WASTE CHARACTERISTICS

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Lakewood Township Landfill - 11/15/95

Source: 0 GR+/R,W+/R,W/R,W+/N,

Source Hazardous Waste Quantity Value: 1.00

Hazardous
Substance

Toxicity
Value

(null)

-32768

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Lakewood Township Landfill - 11/15/95

Toxicity Factor:	4.67E+02
Sum of Source Hazardous Waste Quantity Values:	1.76E+03
Hazardous Waste Quantity Factor:	0

Documentation for Population > 0 to 1/4 mile Distance Category:

According to the 1990 Census Bureau there are 156 people located within 0 to 1/4 mile of the site.

Reference: 4, p. 10 of 10

Documentation for Population > 1/4 to 1/2 mile Distance Category:

According to the 1990 Census Bureau there are 467 people located within 1/4 to 1/2 mile of the site.

Reference: 4, p. 10 of 10

Documentation for Population > 1/2 to 1 mile Distance Category:

According to the 1990 Census Bureau there are 1,765 people located within 1/2 to 1 mile of the site.

Reference: 4, p. 9 of 10

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PREscore 3.0 - PRESCORE.TCL File 07/25/94
AIR PATHWAY LIKELIHOOD OF RELEASE
Lakewood Township Landfill - 11/15/95

PAGE: 103

OBSERVED RELEASE

No. Sample ID	Distance (miles)	Level of Contamination
---------------	---------------------	------------------------

- N/A and/or data not specified

=====

Observed Release Factor: 0

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Gas Migration Potential

GAS POTENTIAL TO RELEASE

Source ID	Source Type	Gas Contain. Value (A)	Gas Source Type Value (B)	Gas Migrtn. Potent. Value (C)	Sum (B+C)	Gas Potential to Rel. Value A(B+C)
Landfill	Landfill	7	11	17	28	196

Gas Potential to Release Factor: 196

Documentation for Gas Containment, Source Landfill:

The landfill is heavily vegetated and the two foot soil cover consists of very fine sand.

Reference: 6, pp. 3 of 8

Documentation for Source Type, Source Landfill:

The Lakewood Township Landfill is municipally owned. The landfill accepted waste from 1973 through 1982 and closed in March of 1984:

Reference: 7, p. 13 of 98; Ref. 13, p. 7 of 20

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Source: Landfill

Gaseous Hazardous Substance	Hazardous Substance Gas Migration Potential Value
Benzene	17
Benzo(k)fluoranthene	6
Butylbenzyl phthalate	6
Chlorobenzene	17
Chloroform	17
Di-n-octyl phthalate	6
Dichlorobenzene, 1,4-	17
Diethyl phthalate	11
Endosulfan (I or II)	11
Ethyl ether	17
Toluene	17
Xylene, m-	17
Xylene, p-	17

Average of Gas Migration Potential Value for 3 Hazardous Substances: 17.000
=====

Gas Migration Potential Value From Table 6-7: 17

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Particulate Migration Potential

PARTICULATE POTENTIAL TO RELEASE

Source ID	Source Type	Partic. Contain. Value (A)	Partic. Source Type Value (B)	Partic. Migrtn. Potent. Value (C)	Sum (B+C)	Partic. Potential to Rel. Value A(B+C)
Landfill	Landfill	7	22	6	28	196

Particulate Potential to Release Factor: 196

Documentation for Particulate Containment, Source Landfill:

The landfill is heavily vegetated and the two foot soil cover consists of fine sand.

Reference: 6, pp. 3 of 8

Documentation for Source Type, Source Landfill:

The Lakewood Township Landfill is municipally owned. The landfill accepted waste from 1973 through 1982 and closed in March of 1984.

Reference: 7, p. 13 of 98; Ref. 13, p. 7 of 20

Documentation for Particulate Migration Potential:

Figure 6-2 of the HRS was used to determine the particulate migration potential factor value.

Reference: 1, Figure 6-2

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Source: Landfill

Particulate Hazardous Substance

Benzo(k)fluoranthene
Butylbenzyl phthalate
Di-n-octyl phthalate
Diethyl phthalate
Endosulfan (I or II)

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PREscore 3.0 - PRESCORE.TCL File 07/25/94
AIR PATHWAY WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

PAGE: 108

Source: 1 Landfill

Source Hazardous Waste Quantity Value: 331.95

Hazardous Substance	Toxicity Value	Gas Mobility Value	Particulate Mobility Value	Toxicity/ Mobility Value
Benzene	100	1.00E+00	NA	1.00E+02
Benzo(k)fluoranthene	100	2.00E-04	2.00E-04	2.00E-02
Butylbenzyl phthalate	10	2.00E-03	2.00E-04	2.00E-02
Chlorobenzene	100	1.00E+00	NA	1.00E+02
Chloroform	100	1.00E+00	NA	1.00E+02
Di-n-octyl phthalate	100	2.00E-03	2.00E-04	2.00E-01
Dichlorobenzene, 1,4-	10	1.00E+00	NA	1.00E+01
Diethyl phthalate	1	2.00E-01	2.00E-04	2.00E-01
Endosulfan (I or II)	100	2.00E-03	2.00E-04	2.00E-01
Ethyl ether	10	1.00E+00	NA	1.00E+01
Toluene	10	1.00E+00	NA	1.00E+01
Xylene, m-	1	1.00E+00	NA	1.00E+00
Xylene, p-	10	1.00E+00	NA	1.00E+01

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Hazardous Substances Found in an Observed Release

Sample Observed Release ID Hazardous Substance	Particulate Toxicity/ Mobility Value	Gas Toxicity/ Mobility Value
---	--	------------------------------------

- N/A and/or data not specified

Documentation for Particulate Mobility:

The Lakewood Township Landfill Site is located in Ocean County, New Jersey. Figure 6-3 of the HRS was used to determine the particulate mobility factor value.

Reference: 1, Figure 6-3

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AIR PATHWAY WASTE CHARACTERISTICS
Lakewood Township Landfill - 11/15/95

PAGE: 110

Toxicity/Mobility Value from Source Hazardous Substances:	1.00E+02
Toxicity/Mobility Value from Observed Release Hazardous Substances:	0.00E+00
Toxicity/Mobility Factor:	1.00E+02
Sum of Source Hazardous Waste Quantity Values:	3.32E+02
Hazardous Waste Quantity Factor:	100
Waste Characteristics Factor Category:	10

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AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Actual Contamination

No. Sample ID	Distance (miles)	Level of Contamination
---------------	---------------------	------------------------

- N/A and/or data not specified

Potential Contamination

Distance Categories Subject
to Potential Contamination

	Population	Value
Onsite	0.0	0.0000
> 0 to 1/4 mile	156.0	4.1000
> 1/4 to 1/2 mile	467.0	2.8000
> 1/2 to 1 mile	1765.0	2.6000
> 1 to 2 miles	9358.0	2.7000
> 2 to 3 miles	25809.0	3.8000
> 3 to 4 miles	25800.0	2.3000

Potential Contaminantion Factor: 18.0000

Documentation for Population Onsite Distance Category:

There were no residents noted on-site during Ebasco's site reconnaissance.

Reference: 6, pp. 1 through 8 of 8

Documentation for Population > 0 to 1/4 mile Distance Category:

According to the 1990 Census Bureau there are 156 people within this distance category.

Reference: 4, p. 10 of 10

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AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Documentation for Population > 1/4 to 1/2 mile Distance Category:

According to the 1990 Census Bureau there are 467 people within this distance category.

Reference: 4, p. 10 of 10

Documentation for Population > 1/2 to 1 mile Distance Category:

According to the 1990 Census Bureau there are 1,765 people within this distance category.

Reference: 4, p. 9 of 10

Documentation for Population > 1 to 2 miles Distance Category:

According to the 1990 Census Bureau there are 9,358 people within this distance category.

Reference: 4, p. 9 of 10

Documentation for Population > 2 to 3 miles Distance Category:

According to the 1990 Census Bureau there are 25,809 people within this distance category.

Reference: 4, p. 9 of 10

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AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Documentation for Population > 3 to 4 miles Distance Category:

According to the 1990 Census Bureau there are 25,800 people within this distance category.

Reference: 4, p. 9 of 10

AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Nearest Individual Factor

Level of Contamination: Potential
Distance in miles: > 0 to 1

Nearest Individual Value: 7

Documentation for Nearest Individual:

The nearest resident to the site is located off the access road to the landfill near the intersection of Cross Street and Prospect Street. The nearest well is also located at this residence.

Reference: 6, p. 6 of 8; Ref. 31, p. 1 of 1

Resources

Resource Use: NO

Resource Value: 0

Documentation for Resources:

There are no known commercial agriculture, commercial silviculture, or major/designated recreation areas within one half mile of the site.

Reference: 6, pp. 1-8 of 8; Ref. 31, p. 1 of 1

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Actual Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value

- N/A and/or data not specified		

Actual Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value

- N/A and/or data not specified		

=====

Sensitive Environments Actual Contamination Factor: 0.000
(Sum of Sensitive Environments + Wetlands Values)

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Potential Contamination, Sensitive Environments

Sensitive Environment	Distance (miles)	Sensitive Environment Value	Distance Weight	Weighted Value/10

- N/A and/or data not specified				

Potential Contamination, Wetlands

Distance Category	Wetland Acreage	Wetland Acreage Value	Distance Weight	Weighted Value/10

> 3 to 4 miles	1283.0	500.0	0.0014	0.070
> 2 to 3 miles	641.0	500.0	0.0023	0.115
> 1 to 2 miles	375.0	350.0	0.0051	0.179
> 1/2 to 1 mile	115.0	125.0	0.0160	0.200
> 1/4 to 1/2 mile	2.0	25.0	0.0540	0.135

Total Wetland Acreage: 2416.0

Sum of Wetland Weighted Acreage Values/10: 0.699

=====

Sensitive Environment Potential Contamination Factor: 0.699

Documentation for Sensitive Environment Wetlands 1/4 to 1/2:

Wetland acreages were calculated using a National Wetlands Inventory map and a clear gridded overlay where one grid is equal to one acre. First The acreage of each individual wetland within the specific distance ring was determined then all the individual wetlands within the distance ring were summed. There are 2 acres of wetlands located within 1/4 to 1/2 mile of the site.

Reference: 32, pp. 1 and 2 of 2

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AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Documentation for Sensitive Environment Wetlands 1/2 to 1:

Wetland acreages were calculated using a National Wetlands Inventory map and a clear gridded overlay where one grid is equal to one acre. First the acreage of each individual wetland within the specific distance ring was determined then all the individual wetlands within the distance ring were summed. There are 115 acres of wetlands located from 1/2 to 1 mile of the site.

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands 1 to 2 :

Wetland acreages were calculated using a National Wetlands Inventory map and a clear gridded overlay where one grid is equal to one acre. First the acreage of each individual wetland within the specific distance ring was determined then all the individual wetlands within the distance ring were summed. There are 375 acres of wetlands from 1 to 2 miles of the site.

Reference: 32, pp. 1 and 2 of 2

Documentation for Sensitive Environment Wetlands 2 to 3:

Wetland acreages were calculated using a National Wetlands Inventory map and a clear gridded overlay where one grid is equal to one acre. First the acreage of each individual wetland within the specific distance ring was determined then all the individual wetland within the distance ring were summed. There are 641 acres of wetlands located within 2 to 3 miles of the site.

Reference: 32, pp. 1 and 2 of 2

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AIR PATHWAY TARGETS

Lakewood Township Landfill - 11/15/95

Documentation for Sensitive Environment Wetlands 3 to 4 :

Wetland acreages were calculated using a National Wetlands Inventory map and a clear gridded overlay where one grid is equal to one acre. First the acreage of each individual wetland within the specific distance ring was determined then all the individual wetlands within the distance ring were summed. There are 1,283 acres of wetlands located within 3 to 4 miles of the site.

Reference: 32, pp. 1 and 2 of 2

REFERENCES

Lakewood Township Landfill - 11/15/95

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